

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 154583.9 IL	FOR FURTHER ACTION		See item 4 below
International application No. PCT/IL2004/000584	International filing date (<i>day/month/year</i>) 01 July 2004 (01.07.2004)	Priority date (<i>day/month/year</i>) 15 July 2003 (15.07.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant NETAFIM (A.C.S.) LTD.			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1 (a).																								
2.	This REPORT consists of a total of 11 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																							
<input checked="" type="checkbox"/>	Box No. II	Priority																							
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																							
<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention																							
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																							
<input type="checkbox"/>	Box No. VI	Certain documents cited																							
<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

<p style="text-align: center;">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 740 14 35</p>	<p>Date of issuance of this report 16 January 2006 (16.01.2006)</p> <p>Authorized officer <div style="text-align: center; font-weight: bold;">Simin Baharlou</div></p> <p>Telephone No. +41 22 338 71 30</p>
--	---

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 09 DEC 2004

WIPO

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/L2004/000584

International filing date (day/month/year)
01.07.2004

Priority date (day/month/year)
15.07.2003

International Patent Classification (IPC) or both national classification and IPC
B05B3/04, F16C17/08

Applicant
NETAFIM (A.C.S.) LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Brévier, F

Telephone No. +31 70 340-2816



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IL2004/000584

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IL2004/000584

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with
- ☒ not complied with for the following reasons:

see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☒ all parts.
- ☐ the parts relating to claims Nos.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IL2004/000584

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	14-21
Inventive step (IS)	Yes: Claims	
	No: Claims	1-21
Industrial applicability (IA)	Yes: Claims	1-21
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item IV

Lack of unity of invention

This Authority considers that there are two inventions covered by the claims indicated as follows:

I: Claims 1-11, 14-19 directed to:

A rotary sprinkler comprising a rotor with an axle having a tip, and a thrust bearing with a socket having a bottom, said socket being adapted to receive for rotation said axle so that said tip abuts said bottom in a contact zone, wherein said sprinkler further comprises at least one hard element constituting at least a part of said bottom or said tip located in said contact zone, said element being made of harder material than said axle or said socket.

II: Claims 12, 13, 20, 21 directed to:

A rotary sprinkler comprising a rotor with an axle having a tip, and a thrust bearing with a socket having an inlet opening of diameter D_0 , a bottom and a peripheral wall therebetween, said socket being adapted to receive slidably and rotatably said axle through said inlet opening so that said tip can abut said bottom, wherein said tip has diameter D_1 close to D_0 , while an adjacent portion of said axle has diameter $D_2 < D_1$, such that, when said tip abuts said bottom, an open annular gap is formed between the axle and the peripheral wall, and when said tip is aligned with said inlet opening, said inlet opening is essentially closed.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The subject-matter of independent claims 1, 14 (as well as dependent claim 2) is known/not inventive (see Written Opinion, Item V).

Therefore special technical features in the sense of Rule 13.2 PCT relating to the first invention (referred to as STF1 hereunder) can only be found in possibly new and inventive dependent claims 3-11 and 15-19 which all relate to a wear reducing hard element.

Special technical features in the sense of Rule 13.2 PCT relating to the second invention (referred to as STF2 hereunder) can be considered as (see dependent claim 12 and independent claim 20):

a socket having an inlet opening of diameter D0, a bottom and a peripheral wall therebetween, said socket being adapted to receive slidably and rotatably said axle through said inlet opening so that the tip of the axle can abut said bottom, wherein said tip has diameter D1 close to D0, while an adjacent portion of said axle has diameter D2 < D1.

STF1 and STF2 are neither the same nor corresponding since they are clearly directed to the resolution of two different problems, i.e.:

- for STF1 reducing wear and providing reduced friction and improved friction endurance of the rotor axle and the thrust bearing
- for STF2 preventing the penetration of contaminating particles into the contact zone of the tip and the socket

In conclusion, the groups of claims are not linked by common or corresponding special technical features and define two different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The following documents are referred to in this communication:

- D1 : US 4 121 769 A (DRORI MORDEKI) 24 October 1978 (1978-10-24)
- D2 : EP 0 743 464 A (BITRON SPA) 20 November 1996 (1996-11-20)
- D3 : PATENT ABSTRACTS OF JAPAN vol. 0120, no. 10 (M-658), 13 January 1988
& JP 62 171515 A (MATSUSHITA ELECTRIC IND CO LTD), 28 July 1987
- D4 : GB 530 912 A (ARPAD NAGY) 24 December 1940 (1940-12-24)
- D5 : US 6 018 442 A (NEGES JOSEF ET AL) 25 January 2000 (2000-01-25)

D6 : US 2002/063483 A1 (OBARA RIKURO) 30 May 2002 (2002-05-30)
D7: US-B-6 199 771 (CLEARMAN JOSEPH H ET AL) 13 March 2001

FIRST INVENTION (claims 1-11, 14-19)

INDEPENDENT CLAIM 1

1 The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 1 does not involve an inventive step in the sense of Article 33(3)PCT.

1.1 Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 1, discloses (the references in parenthesis applying to this document):

A rotary sprinkler comprising a rotor (22) with an axle (32) having a tip (36), and a thrust bearing with a socket (28) having a bottom, said socket (28) being adapted to receive for rotation said axle (22) so that said tip (36) abuts said bottom in a contact zone, wherein said sprinkler further comprises at least one hard element (38) constituting at least a part of said bottom located in said contact zone

1.2 The subject-matter of independent claim 1 differs from the disclosure of D1 in that: said element is made of harder material than said axle or said socket.

The problem to be solved by the present invention may therefore be regarded as reducing wear and providing reduced friction and improved friction endurance of the rotor axle and the thrust bearing.

In view of D2 the solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

1.3 Such a hard element is described in document D2 (see passages cited in the search report) as providing the same advantages as in the present application. The skilled person would therefore regard it as a normal option to include this feature in the device described in document D1 in order to solve the problem posed.

Furthermore the alternative of claim 1 where the hard element constitutes at least a part of the tip is not considered to involve an inventive step since it is generally known to the person skilled in the art that having a hard element as part of the bottom or as part of the tip (see e.g. D3) are alternative solutions which can be interchanged or combined where circumstances make it desirable.

Therefore the features disclosed in D1 and D2 (or D3) would be combined by the skilled person, without exercise of any inventive skills in order to solve the problem posed. The proposed solution in independent claim 1 thus cannot be considered inventive (Article 33(3) PCT).

INDEPENDENT CLAIM 14

- 2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 14 is not new in the sense of Article 33(2) PCT. Document D2 discloses (the references in parenthesis applying to this document):

A hard element (22) (suitable) for use in a rotary sprinkler comprising a rotor with an axle having a tip, and a thrust bearing with a socket having a bottom, said socket being adapted to receive for rotation said axle so that said tip abuts said bottom in a contact zone, said hard element constituting at least a part of said bottom or said tip located in said contact zone, said hard element (22) being made of harder material than said axle or said socket.

Documents D4, D5 and D6 disclose also all the technical features of independent claim 14.

The subject-matter of claim 14 is therefore not new in the sense of Article 33(2) PCT.

DEPENDENT CLAIMS 2-11, 15-19

- 3 Dependent claims 2-11, 15-19 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT) since these features are all either known from, or rendered obvious by the cited prior art (see passages of the documents cited in the search report).

SECOND INVENTION (claims 12, 13, 20, 21)

INDEPENDENT CLAIM 20

- 4 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 20 is not new in the sense of Article 33(2) PCT.

Document D7 (see fig. 18 & col. 13, l. 7-16) discloses (the references in parenthesis applying to this document):

A rotary sprinkler comprising a rotor (54) with an axle having a tip, and a thrust bearing with a socket having an inlet opening of diameter DO , a bottom and a peripheral wall therebetween, said socket being adapted to receive slidably and rotatably said axle through said inlet opening so that said tip can abut said bottom, wherein said tip has diameter DI close to DO , while an adjacent portion of said axle has diameter $D2 < DI$, such that, when said tip abuts said bottom, an open annular gap is formed between the axle and the peripheral wall, and when said tip is aligned with said inlet opening, said inlet opening is **essentially** closed.

DEPENDENT CLAIM 21

- 5 Dependent claim 21 does not contain any features which, in combination with the features of claim 20, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT) for the following reasons:

The rotary sprinkler of D7 has a tip formed as a ball, making therefore the corresponding alternative of claim 21 not new.

The other alternatives of claim 21 are merely some of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

DEPENDENT CLAIMS 12, 13

- 6 Dependent claims 12, 13 do not contain any features which, in combination with the features of claim 1, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT) for the following reasons:

The document D7 is regarded as being the closest prior art to the subject-matter of claim 12, and discloses (the references in parentheses applying to this

document):

A rotary sprinkler comprising a rotor (54) with an axle having a tip, and a thrust bearing with a socket having a bottom, said socket being adapted to receive for rotation said axle so that said tip abuts said bottom in a contact zone, wherein said sprinkler further comprises at least one hard element constituting at least a part of said bottom or said tip located in said contact zone, wherein said socket has an inlet opening of diameter DO and a peripheral wall between said inlet opening and said bottom, said socket being adapted to receive slidably said axle through said inlet opening, wherein said tip has diameter DI close to DO while an adjacent portion of said axle has diameter D2 < DI, such that, when said tip abuts said bottom, an open annular gap is formed between said axle and said peripheral wall, and when said tip is aligned with said inlet opening, said inlet opening is essentially closed.

The subject-matter of claim 12 therefore differs from this known sprinkler in that: said element is made of harder material than said axle or said socket.

A reasoning similar to the one of points 1.2 & 1.3 hereabove leads to a lack of inventive step of claim 12.

- 7 Dependent claim 13 does not contain any features which, in combination with the features of claim 12, meet the requirements of the PCT in respect of or inventive step (Article 33(3) PCT) for reasons similar to the ones mentioned for claim 21 in point 5 hereabove.